

Part 1—Definitions and Abbreviations

This change incorporates Amendment 1-40, Revision of Certain Flight Airworthiness Standards to Harmonize with European Airworthiness Standards for Transport Category Airplanes, adopted June 2, 1995, which adds one definition to § 1.1.

Bold brackets enclose the newly added material. The amendment number and effective date of the new material appear in bold brackets at the end of the section.

Page Control Chart

Remove Pages	Dated	Insert Pages	Dated
1 through 10	Ch. 1	P-243 through P-250 1 through 10	Ch. 2 Ch. 2

Suggest filing this transmittal at the beginning of the FAR. It will provide a method for determining that all changes have been received as listed in the current edition of AC 00-44, Status of Federal Aviation Regulations, and a check for determining if the FAR contains the proper pages.

SUMMARY: The Federal Aviation Administration (FAA) is amending part 25 of the Federal Aviation Regulations (FAR) to harmonize certain flight requirements with the European Joint Aviation Requirements 25 (JAR-25). This action responds to a petition from the Aerospace Industries Association of America, Inc. and the Association Europeenne des Constructeurs de Materiel Aerospatial. These changes are intended to benefit the public interest by standardizing certain requirements, concepts, and procedures contained in the airworthiness standards for transport category airplanes.

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SUPPLEMENTARY INFORMATION:

Background

These amendments are based on Notice of Proposed Rulemaking (NPRM) 94-15, which was published in the *Federal Register* on April 22, 1994 (59 FR 19296). In that notice, the FAA proposed amendments to 14 CFR parts 1 and 25 to harmonize certain airworthiness standards for transport category airplanes with the European Joint Aviation Requirements 25 (JAR-25). Harmonizing the U.S. and European airworthiness standards benefits the public interest by reducing the costs associated with showing compliance to disparate standards, while maintaining a high level of safety.

NPRM 94-15 was developed in response to a petition for rulemaking from the Aerospace Industries Association of America, Inc. (AIA) and the Association Europeenne des Constructeurs de Materiel Aerospatial (AECMA). In their petition, AIA and AECMA requested changes to §§ 25.143(c), 25.143(f), 25.149, and 25.201 to standardize certain requirements, concepts, and procedures for certification flight testing and to enhance reciprocity between the FAA and JAA. In addition, AIA and AECMA recommended changes to FAA Advisory Circular (AC) 25-7, "Flight Test Guide for Certification of Transport Category Airplanes," to ensure that the harmonized standards would be interpreted and applied consistently. A copy of that petition is included in the docket.

The proposals published in NPRM 94-15 would harmonize not only the sections of part 25 and JAR-25 addressed in the petition, but also related sections. These proposals were developed by the Aviation Rulemaking Advisory Committee (ARAC) and forwarded to the FAA as an ARAC recommendation. The FAA accepted the recommendation and published NPRM 94-15 for public comment in accordance with the normal rulemaking process.

The Aviation Rulemaking Advisory Committee

The ARAC was formally established by the FAA on January 22, 1991 (56 FR 2190), to provide advice and recommendations concerning the full range of the FAA's safety-related rulemaking activity. This advice was sought to develop better rules in less overall time using fewer FAA resources than are currently needed. The committee provides the opportunity for the FAA to obtain firsthand information and insight from interested parties regarding proposed new rules or revisions of existing rules.

There are over 60 member organizations on the committee, representing a wide range of interests within the aviation community. Meetings of the committee are open to the public, except as authorized by section 10(d) of the Federal Advisory Committee Act.

The ARAC establishes working groups to develop proposals to recommend to the FAA for resolving specific issues. Tasks assigned to working groups are published in the *Federal Register*. Although working group meetings are not generally open to the public, all interested parties are invited to participate as working group members. Working groups report directly to the ARAC, and the ARAC must concur with a working group proposal before that proposal can be presented to the FAA as an advisory committee recommendation.

in those areas for which the amendments proposed in NPRM 94-15 differ from the current JAR-25.

The FAA proposed to: (1) introduce the term "go-around power or thrust setting" to clarify certain part 25 flight requirements; (2) revise the maximum control forces permitted for demonstrating compliance with the controllability and maneuverability requirements; (3) provide requirements for stick force and stick force gradient in maneuvering flight; (4) revise and clarify the requirements defining minimum control speed during approach and landing; (5) clarify the procedural and airplane configuration requirements for demonstrating stalls and revise the list of acceptable flight characteristics used to define the occurrence of stall; and (6) require that stall characteristics be demonstrated for turning flight stalls at deceleration rates up to 3 knots per second.

Revisions were also proposed for AC 25-7 to ensure consistent application of these proposed revised standards. Public comments concerning the revisions to AC 25-7 were invited by separate notice in the same issue of the *Federal Register* as NPRM 94-15 (59 FR 19303).

Proposal 1. Certain part 25 flight requirements involving flight conditions other than takeoff (i.e., §§ 25.119, 25.121(d), 25.145(b)(3), 25.145(b)(4), 25.145(b)(5), 25.145(c)(1), 25.149(f)(6), and 25.149(g)(7)(ii)) specify using the maximum available takeoff power or thrust as being representative of the appropriate maximum in-flight power or thrust. In practice, however, the power or thrust setting used to obtain the maximum in-flight power or thrust (commonly referred to as the go-around power or thrust setting) usually differs from the setting used for takeoff. In the past, the FAA interpreted the words "maximum available takeoff power or thrust" to mean the maximum in-flight power or thrust, with the takeoff power or thrust setting not always being "available" in flight. In NPRM 94-15, the FAA proposed changing the nomenclature to "go-around power or thrust setting" for clarification and to reflect terminology commonly used in the operational environment. (The term "go-around" refers to a deliberate maneuver to abort a landing attempt prior to touchdown by applying the maximum available power or thrust, retracting flaps, and climbing to a safe level-off altitude.)

The go-around power or thrust setting may differ from the takeoff power or thrust setting, for example, due to the airspeed difference between the takeoff and go-around flight conditions. In addition, complying with the powerplant limitations of § 25.1521 may result in a lower power setting at the higher airspeeds associated with a go-around. As another example, the controllability requirements of §§ 25.145(b)(3), 25.145(b)(4), 25.145(b)(5), 25.149(f), and 25.149(g) may also limit the go-around power or thrust setting to less than that used for takeoff. Another reason to separate the takeoff and go-around power (or thrust) nomenclature is that certification practice has not required, and applicants have not always proposed, changing the go-around power or thrust setting when a previously approved takeoff power or thrust is increased.

The FAA proposed to substitute the term "go-around power or thrust setting" for "maximum available takeoff power or thrust" in §§ 25.119, 25.121(d), 25.145(b)(3), 25.145(b)(4), 25.145(c)(1), 25.149(f)(6), and 25.149(g)(7)(ii). (Note that the requirement of § 25.145(b)(5) also uses the power specified in § 25.145(b)(4).) In addition, the FAA proposed to define "go-around power or thrust setting" in part 1 as "the maximum allowable in-flight power or thrust setting identified in the performance data." By this revision, the FAA intended to clarify that the applicable controllability requirements should be based on the same power or thrust setting used to determine the approach and landing climb performance contained in the approved Airplane Flight Manual (AFM).

The proposed terminology referred to a power or thrust "setting" rather than a power or thrust to make it clear that existing engine ratings would be unaffected. The powerplant limitations of § 25.1521 would continue to apply at the go-around power (or thrust) setting. Existing certification practices would also remain the same, including the relationship between the power or thrust values used to comply with the landing and approach climb requirements of §§ 25.119 and 25.121(d). For example, the thrust value used to comply with § 25.121(d) may be greater than that used for § 25.119, if the operating engine(s) do not reach the maximum allowable in-flight thrust by the end of the eight second time period specified in § 25.119.

the maximum permissible control forces from 75 pounds to 50 pounds for pitch control, and from 60 pounds to 25 pounds for roll control. These lower control forces would be more consistent with § 25.145(b), which states that a force of 50 pounds for longitudinal (pitch) control is "representative of the maximum temporary force that readily can be applied by one hand." In addition to adding more restrictive control force limits for maneuvers in which only one hand may be available to apply pitch and roll control, the FAA proposed to reduce the maximum permissible force for roll control from 60 pounds to 50 pounds for maneuvers in which the pilot normally has both hands available to operate the control.

The FAA proposed to further revise § 25.143(c) by specifying that the table of maximum permissible control forces applies only to conventional wheel type controls. This restriction, also specified in the current JAR 25.143(c), recognizes that different control force limits may be necessary when considering sidestick controllers or other types of control systems.

For clarification, the FAA proposed to replace the terms "temporary" and "prolonged," used in §§ 25.143(c), 25.143(d), 25.143(e), and 25.145(b), with "transient" and "sustained," respectively. "Transient" forces are those control forces resulting from maintaining the intended flight path during changes to the airplane configuration, normal transitions from one flight condition to another, or regaining control after a failure. The pilot is assumed to take immediate action to reduce or eliminate these forces by retrimming or by changing the airplane configuration or flight condition. "Sustained forces," on the other hand, are those control forces resulting from normal or failure conditions that cannot readily be trimmed out or eliminated. The FAA proposed adding these definitions of "transient" and "sustained" forces to AC 25-7.

In addition, the FAA proposed several minor editorial changes for §§ 25.143(c) through 25.143(e) to improve readability and correct grammatical errors. For example, the words "immediately preceding" were proposed to replace "next preceding" in § 25.143(d). These editorial changes were intended only to clarify the regulatory language, while retaining the existing interpretation of the affected sections.

Proposal 3. The FAA proposed to add the JAR 25.143(f) requirements regarding control force characteristics during maneuvering flight to part 25 as a new § 25.143(f). By adding these requirements, the FAA would ensure that the force to move the control column, or "stick," must not be so great as to make excessive demands on the pilot's strength when maneuvering the airplane, and must not be so low that the airplane can easily be overstressed inadvertently.

These harmonized requirements would apply up to the speed V_{FC}/M_{FC} (the maximum speed for stability characteristics) rather than the speed V_{MO}/M_{MO} (the maximum operating limit speed) specified by the current JAR 25.143(f). Requiring these maneuvering requirements to be met up to V_{FC}/M_{FC} is consistent with other part 25 stability requirements. Section 25.253, which defines V_{FC}/M_{FC} , would be revised to reference the use of this speed in the proposed § 25.143(f). An acceptable means of compliance with § 25.143(f), including detailed interpretations of the stick force characteristics that meet these requirements, would be added to AC 25-7.

Proposal 4. Section 25.149(f) requires that the minimum control speed be determined assuming the critical engine suddenly fails during (or just prior to) a go-around from an all-engines-operating approach. For airplanes with three or more engines, § 25.149(g) requires the minimum control speed to be determined for a one-engine-inoperative landing approach in which a second critical engine suddenly fails. The FAA proposed to revise §§ 25.149(f) through 25.149(h) to clarify and revise the criteria for establishing these minimum control speeds, V_{MCL} and V_{MCL-2} , respectively, for use during approach and landing.

The FAA proposed to clarify that V_{MCL} and V_{MCL-2} apply not only to the airplane's approach configuration(s), as prescribed in the current standards, but also to the landing configuration(s). The FAA recognizes that configuration changes occur during approach and landing (e.g., flap setting and landing gear position) and considers that the minimum control speeds provided in the AFM should ensure airplane controllability, following a sudden engine failure, throughout the approach and landing.

the propeller position must reflect the most critical mode of powerplant failure with respect to controllability, as required by § 25.149(a). Also, since credit cannot be given for pilot action to feather the propeller during this high flightcrew workload phase of flight, the FAA proposed that V_{MCL} and V_{MCL-2} be determined with the propeller position of the most critical engine in the position it automatically achieves. For $MCL-2$, the engine that is already inoperative before beginning the approach may be feathered, since the pilot is expected to ensure the propeller is feathered before initiating the approach.

To ensure that airplanes have adequate lateral control capability at V_{MCL} and V_{MCL-2} , the FAA proposed to require airplanes to be capable of rolling, from an initial condition of steady straight flight, through an angle of 20 degrees in not more than 5 seconds, in the direction necessary to start a turn away from the inoperative engine. This proposed addition to § 25.149 is contained in the current JAR 25.149.

The FAA also proposed guidance material for AC 25-7 to enable applicants to additionally determine the appropriate minimum control speeds for an approach and landing in which one engine, and, for airplanes with three or more engines, two engines, are already inoperative prior to beginning the approach. These speeds, $V_{MCL(1 \text{ out})}$ and $V_{MCL-2(2 \text{ out})}$, would be less restrictive than V_{MCL} and V_{MCL-2} because the pilot is assumed to have trimmed the airplane for the approach with an inoperative engine (for $V_{MCL(1 \text{ out})}$) or two inoperative engines (for $V_{MCL-2(2 \text{ out})}$). Also, the approach and landing procedures under these circumstances may use different approach and landing flaps than for the situations defining V_{MCL} or V_{MCL-2} . These additional speeds could be used as guidance in determining the recommended procedures and speeds for a one-engine-inoperative, or, in the case of an airplane with three or more engines, a two-engine-inoperative approach and landing.

The FAA proposed to revise § 25.125 to require the approach speed used for determining the landing distance to be equal to or greater than V_{MCL} , the minimum control speed for approach and landing with all-engines-operating. This provision would ensure that the speeds used for normal landing approaches with all-engines-operating would provide satisfactory controllability in the event of a sudden engine failure during, or just prior to, a go-around.

Proposal 5. The FAA proposed to revise the stall demonstration requirements of § 25.201 to clarify the airplane configurations and procedures used in flight tests to demonstrate stall speeds and stall handling characteristics. The list of acceptable flight characteristics used to define the occurrence of stall would also be revised. To be consistent with current practice, § 25.201(b)(1) would require that stall demonstrations also be conducted with deceleration devices (e.g., speed brakes) deployed. Additionally, the FAA proposed clarifying the intent of § 25.201(b) to cover normal, rather than failure, conditions by requiring that stalls need only be demonstrated for the approved configurations.

Section 25.201(c) would be revised to more accurately describe the procedures used for demonstrating stall handling characteristics. The cross-reference to § 25.103(b), currently contained in § 25.201(c)(1), would be moved to a new § 25.201(b)(4) for editorial clarity and harmony with the JAR-25 format. Reference to the pitch control reaching the aft stop, which would be interpreted as one of the indications that the airplane has stalled, would be moved from § 25.201(c)(1) to § 25.201(d)(3).

The list of acceptable flight characteristics that define the occurrence of a stall, used during the flight tests demonstrating compliance with the stall requirements, is provided in § 25.201(d). The FAA proposed to revise this list to conform with current practices. Section 25.201(d)(1)(ii) would be removed to clarify that a rolling motion, occurring by itself, is not considered an acceptable flight characteristic for defining the occurrence of a stall. The proposed § 25.201(d)(2) would replace the criteria of §§ 25.201(d)(1)(iii) and 25.201(d)(2) because only deterrent buffeting (i.e., a distinctive shaking of the airplane that is a strong and effective deterrent to further speed reduction) is considered to comply with those criteria. Finally, the proposed § 25.201(d)(3) would define as a stall a condition in which the airplane does not continue to pitch up after the pitch control has been pulled back as far as it will go and held there for a short period of time. Guidance material was proposed for AC 25-7 to define the length of time that the control stick must be held in this full aft position when using § 25.201(d)(3) to define a stall.

The AIA/AECMA petition detailed various difficulties with interpretation of the JAR-25 requirement, noted that the requirement is not contained in the FAR, and proposed that dynamic stalls be removed from JAR-25. Some of the concerns with the JAR-25 dynamic stall requirement include: (1) a significant number of flight test demonstrations for compliance used inappropriate piloting techniques considering the capabilities of transport category airplanes; (2) the stated test procedures depend, to a large extent, on pilot interpretation, resulting in test demonstrations that could vary significantly for different test pilots; (3) the safety objective of the requirement is not well understood within the aviation community; and (4) the flight test procedures that are provided are inconsistent with the flight characteristics being evaluated. As a result, applicants are unable to ensure that their designs will comply with the JAR-25 dynamic stall requirement prior to the certification flight test.

In practice, FAA certification testing has typically included stall demonstrations at entry rates higher than 1 knot per second. For airplanes with certain special features, such as systems designed to prevent a stall or that are needed to provide an acceptable stall indication, higher entry rates are demonstrated to show that the system will continue to safely perform its intended function under such conditions. These higher entry rate stalls are different, however, from the JAR-25 dynamic stalls.

Rather than simply deleting the dynamic stall requirement from JAR-25, or adding this requirement to part 25, the ARAC recommended harmonizing the two standards by requiring turning flight stalls be demonstrated at steady airspeed deceleration rates up to 3 knots per second. The FAA agrees with this recommendation and proposed to add the requirement for a higher entry rate stall demonstration to part 25 as § 25.201(c)(2). The current § 25.201(c)(2) would be redesignated § 25.201(c)(3). The JAA would replace the JAR-25 dynamic stall requirement with the ARAC recommendation.

The proposed higher entry rate stall demonstration is a controlled and repeatable maneuver that meets the objective of evaluating stall characteristics over a range of entry conditions that might reasonably be encountered by transport category airplanes in operational service. Some degradation in characteristics would be accepted at the higher entry rates, as long as it does not present a major threat to recovery from the point at which the pilot has recognized the stall. Guidance material was proposed for AC 25-7 to point out that the specified deceleration rate, and associated rate of increase in angle of attack, should be established from the trim speed specified in § 25.103(b)(1) and maintained up to the point at which the airplane stalls.

The FAA proposed to revise § 25.203(c) to specify a bank angle that must not be exceeded during the recovery from the turning flight stall demonstrations. Currently, § 25.203(c) provides only a qualitative statement that a prompt recovery must be easily attainable using normal piloting skill. By specifying a maximum bank angle limit, the FAA proposed to augment this qualitative requirement with a quantitative one.

For deceleration rates up to 1 knot per second, the maximum bank angle would be approximately 60 degrees in the original direction of the turn, or 30 degrees in the opposite direction. These bank angle limits are currently contained in JAR-25 guidance material, and have been used informally during FAA certification programs as well. For deceleration rates higher than 1 knot per second, the FAA proposed to allow a greater maximum bank angle—approximately 90 degrees in the original direction of the turn, or 60 degrees in the opposite direction. These are the same acceptance criteria currently used by the JAA to evaluate dynamic stall demonstrations.

In addition to the amendments to part 25 adopted by this final rule, AC 25-7 is being revised to ensure that these harmonized standards will be interpreted and applied consistently. AC 25-7 provides guidelines that the FAA has found acceptable regarding flight testing transport category airplanes to demonstrate compliance with the applicable airworthiness requirements. The changes to AC 25-7 are described in a separate notice published elsewhere in this issue of the *Federal Register*. Copies of the affected pages will be available for distribution shortly after publication of this final rule.

the requirements, were made to prevent any confusion that may have resulted from the proposed wording.

In § 25.125(a)(2), the FAA has added the words “whichever is greater” in reference to the two constraints on the stabilized approach speed used to determine the landing distance. This addition provides consistency with other sections of part 25 containing multiple constraints, and clarifies that the more critical of the two constraints must be satisfied.

In § 25.143(c), the FAA proposed to replace the term “temporary” with the term “transient” to refer to those control forces that the pilot is assumed to take immediate action to reduce or eliminate. Examples of such forces are those resulting from raising or lowering the flaps or landing gear, changing altitude or speed, or recovering from some type of failure. The intended requirement relates to the initial stabilized force resulting from these events, not to any force peaks that may occur instantaneously. The term “transient,” however, could too easily be misinterpreted to refer to an instantaneous peaking of the force level. Therefore, the FAA is replacing “temporary” with “short term” rather than “transient” in § 25.143(c). For consistent terminology, the FAA is also replacing the term “prolonged” in § 25.143(c) with “long term.” These changes are carried through to the other sections of the proposal in which the terms “temporary” and “prolonged” appear (§§ 25.143(d) and (e) and 25.145(b)). The accompanying advisory material that was proposed for AC 25-7 will also be revised accordingly.

Due to a comment on the revisions proposed for AC 25-7 associated with the proposed rule changes, the FAA finds it necessary to clarify the requirements for the position of the propeller on the engine suddenly made inoperative during the V_{MCL} and V_{MCL-2} determination of §§ 25.149(f) and 25.149(g). A windmilling propeller creates significantly more drag than a feathered propeller, and hence is the more critical position relative to maintaining control of the airplane after an engine failure. Since § 25.149(a) requires V_{MCL} and V_{MCL-2} to be determined using the most critical mode of powerplant failure with respect to controllability, the windmilling position must be assumed. Subsequent feathering of the propeller would be accomplished either by an automatic system that senses the engine failure or by the pilot manually adjusting the cockpit controls.

The requirements proposed in NPRM 94-15 would allow the propeller to be in the feathered position if the propeller feathering is done automatically. Credit for pilot action to manually feather the propeller would be inappropriate during this high workload phase of flight. Because an autofeather system may not be designed to respond to an engine failure at low power settings, one commenter proposes adding a statement to the advisory material in AC 25-7 to state that the engine failure could be assumed to occur after the pilot sets go-around power. The commenter’s proposal would ensure that automatic propeller feathering could be taken into account in determining V_{MCL} and V_{MCL-2} , even if the automatic feathering would not occur for engine failures at low power settings.

The FAA does not concur with the commenter’s proposal. As was noted in the NPRM 94-15 preamble discussion, V_{MCL} and V_{MCL-2} must be determined assuming the critical engine suddenly fails during, or just prior to, the go-around maneuver. A sudden engine failure during an approach for landing may be the reason for initiating the go-around. If the autofeather system does not feather the propeller in this situation, the minimum control speeds should not assume the propeller is feathered.

To clarify this point, §§ 25.149(f)(5) and 25.149(g)(5) have been revised to state that the engine failure must be assumed to occur from the power setting associated with maintaining a three degree approach path angle. The revised wording also clarifies that these provisions apply only to propeller airplanes. The word “automatically,” referring to the position achieved by the propeller, has been replaced with “without pilot action.” This revision further clarifies the intent of the requirement and is more appropriate terminology for applying these requirements to airplanes lacking an autofeather system.

The FAA is clarifying § 25.201(d)(1) by removing the reference to rolling motion. Section 25.201(d) defines and lists the airplane behavior that gives the pilot a clear indication that the airplane has stalled. The presence of rolling motion is immaterial to determining whether or not the airplane has stalled. The proposed wording had been intended to emphasize that a rolling motion by itself would be unacceptable as a stall indication, and that any rolling motion that did occur must be within the bounds allowed

Three principal requirements pertain to the economic impacts of changes to the Federal Aviation Regulations. First, Executive Order 12866 directs Federal agencies to promulgate new regulations or modify existing regulations only if the expected benefits to society outweigh the expected costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic impact of regulatory changes on small entities. Finally, the Office of Management and Budget directs agencies to assess the effect of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: (1) will generate benefits exceeding costs; (2) is not "significant" as defined in the Executive Order and the Department of Transportation's (DOT) policies and procedures; (3) will not have a significant impact on a substantial number of small entities; and (4) will lessen restraints on international trade. These analyses, available in the docket, are summarized below.

Cost Benefit Analysis

Three of the 48 provisions will require additional flight testing and engineering analysis, resulting in compliance costs of \$18,500 per type-certification, or about \$37 per airplane when amortized over a representative production run of 500 airplanes. The primary benefits of the rule are harmonization of flight test airworthiness standards with the European Joint Aviation Requirements and clarification of existing standards. The resulting increased uniformity of flight test standards will simplify airworthiness approvals and reduce overall flight testing costs. While not readily quantifiable, these benefits will far exceed the incremental costs of the rule.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily or disproportionately burdened by Federal regulations. The RFA requires a Regulatory Flexibility Analysis if a rule will have a significant economic impact, either detrimental or beneficial, on a substantial number of small entities. FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, prescribes standards for complying with RFA review requirements in FAA rulemaking actions. The Order defines "small entities" in terms of size thresholds, "significant economic impact" in terms of annualized cost thresholds, and "substantial number" as a number which is not less than eleven and which is more than one-third of the small entities subject to the proposed or final rule.

The rule will affect manufacturers of transport category airplanes produced under future new airplane type certifications. For manufacturers, Order 2100.14A specifies a size threshold for classification as a small entity as 75 or fewer employees. Since no part 25 airplane manufacturer has 75 or fewer employees, the rule will not have a significant economic impact on a substantial number of small airplane manufacturers.

Trade Impact Assessment

This final rule will not constitute a barrier to international trade, including the export of American airplanes to foreign countries, and the import of foreign airplanes into the United States. Instead, the flight testing standards have been harmonized with those of foreign aviation authorities, thereby lessening restraints on trade.

Federalism Implications

This final rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule will not have sufficient federalism implications to warrant preparing a Federalism Assessment.

Conclusion

Because the changes to standardize specific flight requirements of part 25 of the FAR are not expected to result in substantial economic cost, the FAA has determined that this regulation is not significant under Executive Order 12866. Because this is an issue that has not prompted a great deal of public

In consideration of the foregoing, the Federal Aviation Administration (FAA) amends 14 CFR parts 1 and 25 of the Federal Aviation Regulations (FAR) effective July 10, 1995.

The authority citation for part 1 continues to read as follows:

Authority: 49 U.S.C. app. 1347, 1348, 1354(a), 1357(d)(2), 1372, 1421 through 1430, 1432, 1442, 1443, 1472, 1510, 1522, 1652(e), 1655(c), 1657(f), and 49 U.S.C. 106(g).

“Aerodynamic coefficients” means nondimensional coefficients for aerodynamic forces and moments.

“Air carrier” means a person who undertakes directly by lease, or other arrangement, to engage in air transportation.

“Air commerce” means interstate, overseas, or foreign air commerce or the transportation of mail by aircraft or any operation or navigation of aircraft within the limits of any Federal airway or any operation or navigation of aircraft when directly affects, or which may endanger safety in, interstate, overseas, or foreign air commerce.

“Aircraft” means a device that is used or intended to be used for flight in the air.

“Aircraft engine” means an engine that is used or intended to be used for propelling aircraft. It includes turbosuperchargers, appurtenances, and accessories necessary for its functioning, but does not include propellers.

“Airframe” means the fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls.

“Airplane” means an engine-driven fixed-wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings.

“Airport” means an area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

“Airship” means an engine-driven lighter-than-air aircraft that can be steered.

“Air traffic” means aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

“Air transportation” means interstate, overseas, or foreign air transportation or the transportation of mail by aircraft.

“Alternate airport” means an airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

“Altitude engine” means a reciprocating aircraft engine having a rated takeoff power that is producible from sea level to an established higher altitude.

“Appliance” means any instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is used or intended to be used in operating or controlling an aircraft in flight, is installed in or attached to the aircraft, and is not part of an airframe, engine, or propeller.

“Approved”, unless used with reference to another person, means approved by the Administrator.

“Area navigation (RNAV)” means a method of navigation that permits aircraft operations on any desired course within the coverage of station-referenced navigation signals or within the limits of self-contained system capability.

“Area navigation low route” means an area navigation route within the airspace extending upward from 1,200 feet above the surface of the earth to, but not including, 18,000 feet MSL.

“Area navigation high route” means an area navigation route within the airspace extending upward from, and including, 18,000 feet MSL to flight level 450.

“Armed Forces” means the Army, Navy, Air Force, Marine Corps, and Coast Guard, including their regular and reserve components and members serving without component status.

is not engine driven.

“Brake horsepower” means the power delivered at the propeller shaft (main drive or main output) of an aircraft engine.

“Calibrated airspeed” means indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.

“Canard” means the forward wing of a canard configuration and may be a fixed, movable, or variable geometry surface, with or without control surfaces.

“Canard configuration” means a configuration in which the span of the forward wing is substantially less than that of the main wing.

“Category”:

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a broad classification of aircraft. Examples include: airplane; rotorcraft; glider; and lighter-than-air; and

(2) As used with respect to the certification of aircraft, means a grouping of aircraft based upon intended use of operating limitations. Examples include: transport, normal, utility, acrobatic, limited, restricted, and provisional.

“Category A,” with respect to transport category rotorcraft, means multiengine rotorcraft designed with engine and system isolation features specified in part 29 and utilizing scheduled takeoff and landing operations under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of engine failure.

“Category B,” with respect to transport category rotorcraft, means single-engine or multiengine rotorcraft which do not fully meet all Category A standards. Category B rotorcraft have no guaranteed stay-up ability in the event of engine failure and unscheduled landing is assumed.

“Category II operations”, with respect to the operation of aircraft, means a straight-in ILS approach to the runway of an airport under a Category II ILS instrument approach procedure issued by the Administrator or other appropriate authority.

phenomena that is reported as broken, overcast”, or “obscuration”, and not classified as “thin” or “partial”.

“Civil aircraft” means aircraft other than public aircraft.

“Class”:

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a classification of aircraft within a category having similar operating characteristics. Examples include: single engine; multiengine; land; water; gyroplane; helicopter; airship; and free balloon; and

(2) As used with respect to the certification of aircraft, means a broad grouping of aircraft having similar characteristics of propulsion, flight, or landing. Examples include: airplane; rotorcraft; glider; balloon; landplane; and seaplane.

“Clearway” means:

(1) For turbine engine powered airplanes certificated after August 29, 1959, an area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25 percent, above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the runway is 26 inches or less and if they are located to each side of the runway.

(2) For turbine engine powered airplanes certificated after September 30, 1958, but before August 30, 1959, an area beyond the takeoff runway extending no less than 300 feet on either side of the extended centerline of the runway, at an elevation no higher than the elevation of the end of the runway, clear of all fixed obstacles, and under the control of the airport authorities.

“Climbout speed,” with respect to rotorcraft, means a referenced airspeed which results in a flight path clear of the height-velocity envelope during initial climbout.

other business or, in itself, a major enterprise for profit.

“Controlled airspace” means an airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

NOTE: Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.

“Crewmember” means a person assigned to perform duty in an aircraft during flight time.

“Critical altitude” means the maximum altitude at which, in standard atmosphere, it is possible to maintain, at a specified rotational speed, a specified power or a specified manifold pressure. Unless otherwise stated, the critical altitude is the maximum altitude at which it is possible to maintain, at the maximum continuous rotational speed, one of the following:

(1) The maximum continuous power, in the case of engines for which this power rating is the same at sea level and at the rated altitude.

(2) The maximum continuous rated manifold pressure, in the case of engines the maximum continuous power of which, is governed by a constant manifold pressure.

“Critical engine” means the engine whose failure would most adversely affect the performance or handling qualities of an aircraft.

“Decision height”, with respect to the operation of aircraft, means the height at which a decision must be made, during an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

“Equivalent airspeed” means the calibrated airspeed of an aircraft corrected for adiabatic compressible flow for the particular altitude. Equivalent airspeed is equal to calibrated airspeed in standard atmosphere at sea level.

“Extended over-water operation” means—

(1) With respect to aircraft other than helicopters, and operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline; and

structural components used to attach an external load to an aircraft, including external-load containers, the backup structure at the attachment points, and any quick-release device used to jettison the external load.

“Fireproof”—

(1) With respect to materials and parts used to confine fire in a designated fire zone, means the capacity to withstand at least as well as steel in dimensions appropriate for the purpose for which they are used, the heat produced when there is a severe fire of extended duration in that zone; and

(2) With respect to other materials and parts, means the capacity to withstand the heat associated with fire at least as well as steel in dimensions appropriate for the purpose for which they are used.

“Fire resistant”—

(1) With respect to sheet or structural members means the capacity to withstand the heat associated with fire at least as well as aluminum alloy in dimensions appropriate for the purpose for which they are used; and

(2) With respect to fluid-carrying lines, fluid system parts, wiring, air ducts, fittings, and powerplant controls, means the capacity to perform the intended functions under the heat and other conditions likely to occur when there is a fire at the place concerned.

“Flame resistant” means not susceptible to combustion to the point of propagating a flame, beyond safe limits, after the ignition source is removed.

“Flammable”, with respect to a fluid or gas, means susceptible to igniting readily or to exploding.

“Flap extended speed” means the highest speed permissible with wing flaps in a prescribed extended position.

“Flash resistant” means not susceptible to burning violently when ignited.

“Flight crewmember” means a pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.

ing to the intended flight of an aircraft, that is filed orally or in writing with air traffic control.

“Flight time” means the time from the moment the aircraft first moves under its own power for the purpose of flight until the moment it comes to rest at the next point of landing. (“Block-to-block” time.)

“Flight visibility” means the average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.

“Foreign air carrier” means any person other than a citizen of the United States, who undertakes directly, by lease or other arrangement, to engage in air transportation.

“Foreign air commerce” means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in the United States and any place outside thereof; whether such commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

“Foreign air transportation” means the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce between a place in the United States and any place outside of the United States, whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

“Forward wing” means a forward lifting surface of a canard configuration or tandem-wing configuration airplane. The surface may be a fixed, movable, or variable geometry surface, with or without control surfaces.

“Glider” means a heavier-than-air aircraft, that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does not depend principally on an engine.

【“Go-around power or thrust setting” means the maximum allowable in-flight power or thrust setting identified in the performance data.】

consisting usually of conventional propellers, is independent of the rotor system.

“Gyroplane” means a rotorcraft whose rotors are not engine-driven except for initial starting, but are made to rotate by action of the air when the rotorcraft is moving; and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system.

“Helicopter” means a rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

“Heliport” means an area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters.

“Idle thrust” means the jet thrust obtained with the engine power control lever set at the stop for the least thrust position at which it can be placed.

“IFR conditions” means weather conditions below the minimum for flight under visual flight rules.

“IFR over-the-top”, with respect to the operation of aircraft, means the operation of an aircraft over-the-top on an IFR flight plan when cleared by air traffic control to maintain “VFR conditions” or “VFR conditions on top”.

“Indicated airspeed” means the speed of an aircraft as shown on its pitot static airspeed indicator calibrated to reflect standard atmosphere adiabatic compressible flow at sea level uncorrected for airspeed system errors.

“Instrument” means a device using an internal mechanism to show visually or aurally the attitude, altitude, or operation of an aircraft or aircraft part. It includes electronic devices for automatically controlling an aircraft in flight.

“Interstate air commerce” means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and a place in any other State of the United States, or the District of Columbia; or between places in the same State of the United States through the airspace over any place outside thereof; or between places in

of the District of Columbia;

(2) Between places in the same State through the airspace over any place outside that State; or

(3) Between places in the same possession of the United States;

whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

“Intrastate air transportation” means the carriage of persons or property as a common carrier for compensation or hire, by turbojet-powered aircraft capable of carrying thirty or more persons, wholly within the same State of the United States.

“Kite” means a framework, covered with paper, cloth, metal, or other material, intended to be flown at the end of a rope or cable, and having as its only support the force of the wind moving past its surfaces.

“Landing gear extended speed” means the maximum speed at which an aircraft can be safely flown with the landing gear extended.

“Landing gear operating speed” means the maximum speed at which the landing gear can be safely extended or retracted.

“Large aircraft” means aircraft of more than 12,500 pounds, maximum certificated takeoff weight.

“Lighter-than-air aircraft” means aircraft that can rise and remain suspended by using contained gas weighing less than the air that is displaced by the gas.

“Load factor” means the ratio of a specified load to the total weight of the aircraft. The specified load is expressed in terms of any of the following: aerodynamic forces, inertia forces, or ground or water reactions.

“Mach number” means the ratio of true airspeed to the speed of sound.

“Main rotor” means the rotor that supplies the principal lift to a rotorcraft.

“Maintenance” means inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance.

practices or cannot be done by elementary operations.

“Major repair” means a repair—

(1) That, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or

(2) That is not done according to accepted practices or cannot be done by elementary operations.

“Manifold pressure” means absolute pressure as measured at the appropriate point in the induction system and usually expressed in inches of mercury.

“Medical certificate” means acceptable evidence of physical fitness on a form prescribed by the Administrator.

“Minimum descent altitude” means the lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure, where no electronic glide slope is provided.

“Minor alteration” means an alteration other than a major alteration.

“Minor repair” means a repair other than a major repair.

“Navigable airspace” means airspace at and above the minimum flight altitudes prescribed by or under this chapter, including airspace needed for safe takeoff and landing.

“Night” means the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

“Nonprecision approach procedure” means a standard instrument approach procedure in which no electronic glide slope is provided.

“Operate,” with respect to aircraft, means use, cause to use or authorize to use aircraft, for the purpose (except as provided in § 91.13 of this chapter) of air navigation including the piloting of aircraft, with or without the right of legal control (as owner, lessee, or otherwise).

merce between a place in any State or the United States, or the District of Columbia, and any place in a territory or possession of the United States; or between a place in a territory or possession of the United States, and a place in any other territory or possession of the United States.

“Overseas air transportation” means the carriage by aircraft of persons or property as a common carrier or compensation or hire, or the carriage of mail by aircraft, in commerce—

(1) Between a place in a State or the District of Columbia and a place in a possession of the United States; or

(2) Between a place in a possession of the United States and a place in another possession of the United States; whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

“Over-the-top” means above the layer of clouds or other obscuring phenomena forming the ceiling.

“Parachute” means a device used or intended to be used to retard the fall of a body or object through the air.

“Person” means an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them.

“Pilotage” means navigation by visual reference to landmarks.

“Pilot in command” means the pilot responsible for the operation and safety of an aircraft during flight time.

“Pitch setting” means the propeller blade setting as determined by the blade angle measured in a manner, and at a radius, specified by the instruction manual for the propeller.

“Positive control” means control of all air traffic, within designated airspace, by air traffic control.

“Precision approach procedure” means a standard instrument approach procedure in which an electronic glide slope is provided, such as ILS and PAR.

“Preventive maintenance” means simple or minor preservation operations and the replacement

plane or rotation, it includes component components normally supplied by its manufacturer, but does not include main and auxiliary rotors or rotating airfoils of engines.

“Public aircraft” means an aircraft used only for the United States Government, or owned and operated (except for commercial purposes), or exclusively leased for at least 90 continuous days, by a government (except the United States Government), including a State, the District of Columbia, or a territory or possession of the United States, or political subdivision of that government; but does not include a government-owned aircraft transporting property for commercial purposes, or transporting passengers other than transporting (for other than commercial purposes) crewmembers or other persons aboard the aircraft whose presence is required to perform, or is associated with the performance of, a governmental function such as firefighting, search and rescue, law enforcement, aeronautical research, or biological or geological resource management; or transporting (for other than commercial purposes) persons aboard the aircraft if the aircraft is operated by the Armed Forces or an intelligence agency of the United States. An aircraft described in the preceding sentence shall, notwithstanding any limitation relating to use of the aircraft for commercial purposes, be considered to be a public aircraft for the purposes of this Chapter without regard to whether the aircraft is operated by a unit of government on behalf of another unit of government, pursuant to a cost reimbursement agreement between such units of government, if the unit of government on whose behalf the operation is conducted certifies to the Administrator of the Federal Aviation Administration that the operation was necessary to respond to a significant and imminent threat to life or property (including natural resources) and that no service by a private operator was reasonably available to meet the threat.

“Rated continuous OEI power,” with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under part 33 of this chapter, and limited in use

...the engine operating limitations established under part 33 of this chapter, and approved for unrestricted periods of use.

"Rated maximum continuous power", with respect to reciprocating, turbopropeller, and turboshaft engines, means the approved brake horsepower that is developed statically or in flight, in standard atmosphere at a specified altitude, within the engine operating limitations established under part 33, and approved for unrestricted periods of use.

"Rated maximum continuous thrust", with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under part 33 of this chapter, and approved for unrestricted periods of use.

"Rated takeoff augmented thrust", with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.

"Rated takeoff power", with respect to reciprocating, turbopropeller, and turboshaft engine type certification, means the approved brake horsepower that is developed statically under standard sea level conditions, within the engine operating limitations established under part 33, and limited in use to periods of not over 5 minutes for takeoff operation.

"Rated takeoff thrust", with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.

"Rated 30-minute OEI power", with respect to rotorcraft turbine engines, means the approved

brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under part 33 of this chapter, and limited in use to a period of not more than 2½ minutes after the failure of one engine of a multiengine rotorcraft.

"Rating" means a statement that, as a part of a certificate, sets forth special conditions, privileges, or limitations.

"Reporting point" means a geographical location in relation to which the position of an aircraft is reported.

"Restricted area" means airspace designated under part 73 of this chapter within which the flight of aircraft, while not wholly prohibited, is subject to restriction.

"RNAV way point (W/P)" means a predetermined geographical position used for route or instrument approach definition or progress reporting purposes that is defined relative to a VORTAC station position.

"Rocket" means an aircraft propelled by ejected expanding gases generated in the engine from self-contained propellants and not dependent on the intake of outside substances. It includes any part which becomes separated during the operation.

"Rotorcraft" means a heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors.

"Rotorcraft-load combination" means the combination of a rotorcraft and an external-load, including the external-load attaching means. Rotorcraft-load combinations are designated as Class A, Class B, Class C, and Class D, as follows:

(1) "Class A rotorcraft-load combination" means one in which the external load cannot move freely, cannot be jettisoned, and does not extend below the landing gear.

(2) "Class B rotorcraft-load combination" means one in which the external load is jettisonable and is lifted free of land or water during the rotorcraft operation.

(3) "Class C rotorcraft-load combination" means one in which the external load is jettisonable and remains in contact with land or water during the rotorcraft operation.

(2) a point at which a definite radio fix can be established.

“Sea level engine” means a reciprocating aircraft engine having a rated takeoff power that is producible only at sea level.

“Second in command” means a pilot who is designated to be second in command of an aircraft during flight time.

“Show”, unless the context otherwise requires, means to show to the satisfaction of the Administrator.

“Small aircraft” means aircraft of 12,500 pounds or less, maximum certificated takeoff weight.

“Special VFR conditions” mean meteorological conditions that are less than those required for basic VFR flight in controlled airspace and in which some aircraft are permitted flight under visual flight rules.

“Special VFR operations” means aircraft operating in accordance with clearances within controlled airspace in meteorological conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

“Standard atmosphere” means the atmosphere defined in U.S. Standard Atmosphere, 1962 (Geopotential altitude tables).

“Stopway” means an area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

“Takeoff power”—

(1) With respect to reciprocating engines, means the brake horsepower that is developed under standard sea level conditions, and under the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification; and

(2) With respect to turbine engines, means the brake horsepower that is developed under static conditions at a specified altitude and atmospheric

achieved.

“Takeoff thrust”, with respect to turbine engines, means the jet thrust that is developed under static conditions at a specific altitude and atmospheric temperature under the maximum conditions of rotorshaft rotational speed and gas temperature approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification.

“Tandem wing configuration” means a configuration having two wings of similar span, mounted in tandem.

“TCAS I” means a TCAS that utilizes interrogations of, and replies from, airborne radar beacon transponders and provides traffic advisories to the pilot.

“TCAS II” means a TCAS that utilizes interrogations of, and replies from airborne radar beacon transponders and provides traffic advisories and resolution advisories in the vertical plane.

“TCAS III” means a TCAS that utilizes interrogation of, and replies from, airborne radar beacon transponders and provides traffic advisories and resolution advisories in the vertical and horizontal planes to the pilot.

“Time in service”, with respect to maintenance time records, means the time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing.

“True airspeed” means the airspeed of an aircraft relative to undisturbed air. True airspeed is equal to equivalent airspeed multiplied by $(\rho_0/\rho)^{1/2}$.

“Traffic pattern” means the traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from, an airport.

“Type”:

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a specific make and basic model of aircraft, including modifications thereto that do not change its handling or flight characteristics. Examples include: DC-7, 1049, and F-27; and

(2) As used with respect to the certification of aircraft, means those aircraft which are similar in design. Examples include: DC-7 and DC-7C; 1049G and 1049H; and F-27 and F-27F.

“United States air carrier” means a citizen of the United States who undertakes directly by lease, or other arrangement, to engage in air transportation.

“VFR over-the-top”, with respect to the operation of aircraft, means the operation of an aircraft over-the-top under VFR when it is not being operated on an IFR flight plan.

“Winglet or tip fin” means an out-of-plane surface extending from a lifting surface. The surface may or may not have control surfaces.

(Amdt. 1-9, Eff. 9/26/65); (Amdt. 1-10, Eff. 3/29/66); (Amdt. 1-12, Eff. 8/7/67); (Amdt. 1-13, Eff. 8/3/67); (Amdt. 1-14, Eff. 11/18/67); (Amdt. 1-16, Eff. 5/8/70); (Amdt. 1-17, Eff. 6/25/70); (Amdt. 1-19, Eff. 9/18/70); (Amdt. 1-20, Eff. 2/4/71); (Amdt. 1-21, Eff. 7/20/71); (Amdt. 1-22, Eff. 4/14/72); (Amdt. 1-23, Eff. 10/31/74); (Amdt. 1-24, Eff. 3/15/75); (Amdt. 1-25, Eff. 12/9/76); (Amdt. 1-26, Eff. 5/2/77); (Amdt. 1-29, Eff. 3/1/78); (Amdt. 1-30, Eff. 5/8/81); (Amdt. 1-31, Eff. 3/2/83); (Amdt. 1-32, Eff. 12/6/84); (Amdt. 1-33, Eff. 1/6/87); (Amdt. 1-34, Eff. 10/3/88); (Amdt. 1-35, Eff. 2/9/89); (Amdt. 1-36, Eff. 8/18/90); (Amdt. 1-37, Eff. 2/4/91); (Amdt. 1-38, Eff. 9/16/93); (Amdt. 1-39, Eff. 4/23/95); [(Amdt. 1-40, Eff. 7/10/95)]

§ 1.2 Abbreviations and symbols.

In Subchapters A through K of this chapter:

“AGL” means above ground level.

“ALS” means approach light system.

“ASR” means airport surveillance radar.

“ATC” means air traffic control.

“CAS” means calibrated airspeed.

“CAT II” means Category II.

“CONSOL or CONSOLAN” means a kind of low or medium frequency long range navigational aid.

“DH” means decision height.

“DME” means distance measuring equipment compatible with TACAN.

“EAS” means equivalent airspeed.

“FAA” means Federal Aviation Administration.

“ILS” means instrument landing system.

“IM” means ILS inner marker.

“INT” means intersection.

“LDA” means localizer-type directional aid.

“LFR” means low-frequency radio range.

“LMM” means compass locator at middle marker.

“LOC” means ILS localizer.

“LOM” means compass locator at outer marker.

“M” means mach number.

“MAA” means maximum authorized IFR altitude.

“MALS” means medium intensity approach light system.

“MALSR” means medium intensity approach light system with runway alignment indicator lights.

“MCA” means minimum crossing altitude.

“MDA” means minimum descent altitude.

“MEA” means minimum en route IFR altitude.

“MM” means ILS middle marker.

“MOCA” means minimum obstruction clearance altitude.

“MRA” means minimum reception altitude.

“MSL” means mean sea level.

“NDB(ADF)” means nondirectional beacon (automatic direction finder).

“NOPT” means no procedure turn required.

“OEI” means one engine inoperative.

“OM” means ILS outer marker.

“PAR” means precision approach radar.

“RAIL” means runway alignment indicator light system.

“RBN” means radio beacon.

“RCLM” means runway centerline marking.

“RCLS” means runway centerline light system.

“REIL” means runway end identification lights.

“RR” means low or medium frequency radio range station.

“RVR” means runway visual range as measured in the touchdown zone area.

“SALS” means short approach light system.

“SSALS” means simplified short approach light system.

“VOR” means very high frequency terminal omnirange station.

V_A means design maneuvering speed.

V_B means design speed for maximum gust intensity.

V_C means design cruising speed.

V_D means design diving speed.

V_{DF}/M_{DF} means demonstrated flight diving speed.

V_F means design flap speed.

V_{FC}/M_{FC} means maximum speed for stability characteristics.

V_{FE} means maximum flap extended speed.

V_H means maximum speed in level flight with maximum continuous power.

V_{LE} means maximum landing gear extended speed.

V_{LO} means maximum landing gear operating speed.

V_{LOF} means lift-off speed.

V_{MC} means minimum control speed with the critical engine inoperative.

V_{MO}/M_{MO} means maximum operating limit speed.

V_{MU} means minimum unstick speed.

V_{NE} means never-exceed speed.

V_{NO} means maximum structural cruising speed.

V_R means rotation speed.

V_S means the stalling speed or the minimum steady flight speed at which the airplane is controllable.

V_{SO} means the stalling speed or the minimum steady flight speed in the landing configuration.

V_{S1} means the stalling speed or the minimum steady flight speed obtained in a specific configuration.

“VFR” means visual flight rules.

“VHF” means very high frequency.

“VOR” means very high frequency omnirange station.

“VORTAC” means collocated VOR and TACAN.

(Amdt. 1-10, Eff. 3/29/66); (Amdt. 1-14, Eff. 11/18/67); (Amdt. 1-15, Eff. 2/25/68); (Amdt. 1-18, Eff. 8/18/70); (Amdt. 1-27, Eff. 9/14/77); (Amdt. 1-28, Eff. 9/21/77); (Amdt. 1-29, Eff. 3/1/78); (Amdt. 1-32, Eff. 12/6/84); (Amdt. 1-34, Eff. 10/3/88); (Amdt. 1-35, Eff. 2/9/89)

§ 1.3 Rules of construction.

(a) In Subchapters A through K of this chapter, unless the context requires otherwise:

(1) Words importing the singular include the plural;

(2) Words importing the plural include the singular; and

(3) Words importing the masculine gender include the feminine.

(b) In Subchapters A through K of this chapter, the word:

(1) “Shall” is used in an imperative sense;

(2) “May” is used in a permissive sense to state authority or permission to do the act prescribed, and the words “no person may . . .” or “a person may not . . .” mean that no person is required, authorized, or permitted to do the act prescribed; and

(3) “Includes” means “includes but is not limited to”.

(Amdt. 1-10, Eff. 3/29/66)

